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are adsorbed by the clay and humus, and the acids set free. In such areas the reaction is often found to change sharply within a few centimeters from a specific alkalinity of 30 to a specific acidity of 300. These methods and results seem likely to place the old contention of the relative importance of the physical and chemical properties of soil upon a new experimental basis, and to result in a much clearer conception of the meaning and application of the terms "oxylophytes" and "calcicoles."—GEO. D. FULLER.

Seacoast vegetation.—A description of the vegetation of the eroding seashores of Connecticut has been added by NICHOLS²⁶ to his other studies of the vegetation of the state previously noted in this journal.²⁷ He groups the important factors as those relating to submergence, such as salinity, tides, illumination, and temperature of the water, those relating to physiography, and those to atmospheric influences. The eroding seashores of the state are developed either in rock or glacial drift, and from each of these situations distinctive associations are described. The range of the studies is from the sublittoral algal associations to the forests which fringe the shores.

The depositing shores present even more diverse conditions,²⁸ depending principally upon the character of the soil, stony, sandy, and muddy areas, each having characteristic series of associations. The various associations are carefully described, and in the actual succession along muddy shores there is found evidence of coastal subsidence similar to that presented by GANONG, PENHALLOW, BARTLETT, and others.

Some attention is devoted to the salt marsh depressions or "pans" which appear to have various origins. Some are due to the destruction of the ordinary salt marsh vegetation by the decay of masses of plant remains swept over the surface during times of unusually high water, but others result from the partial filling and obstructing of tidal creeks and lagoons or by the building of tidal levees and the consequent ponding of water, between tides, in the lower parts of the marsh.—GEO. D. FULLER.

Crown gall of alfalfa.—WILSON²⁹ has described and figured in some detail the fungus causing crown gall of alfalfa. He concludes that the parasite is present in the gall in the form of a plasmodium, formed by the fusion of amoeboid cells in the host cells. He thinks that it spreads through the host tissues as a streaming mass or network of naked protoplasm, and that any mycelium observed has no connection with the gall forming organism. This plasmodial

²⁶ NICHOLS, GEO. E., The vegetation of Connecticut. VI. The plant associations of eroding areas along the seacoast. *Bull. Torr. Bot. Club* 47:89-117. *fig. 6*. 1920.

²⁷ ———, *BOT. GAZ.* 59:159-160. 1915; 65:572. 1918.

²⁸ ———, The vegetation of Connecticut. VII. The associations of depositing areas along the seacoast. *Bull. Torr. Bot. Club* 47:511-548. *fig. 10*. 1920.

²⁹ *BOT. GAZ.* 70:51. 1920.

state of the fungus was not observed by VON LAGERHEIM,³⁰ or by MAGNUS,³¹ and has never been found by the reviewer. Even at a very early stage a definite mycelium appears to be present in the host plant, the hyphae of which are bounded by a thin wall. The ends of these hyphae form small swellings or vesicles which are active in dissolving the walls of the host cells. The method of branching of the hyphae and the development of the resting spore have been studied, and they seem to agree very closely with the descriptions given by SCHROETER,³² MAGNUS, and VON LAGERHEIM for this fungus and for others which they consider closely allied to it. It is hoped to publish shortly a full account of this investigation and of a number of infection experiments undertaken in connection with several outbreaks of the disease in this country.—JAMES LINE, *Botany School, Cambridge, England.*

Radio-active material.—BLACKMAN³³ gives an extremely clear statement of the possible significance of radio-activity in normal physiological processes. He discusses mainly the work of the Dutch investigator H. ZWAARDEMAKER (*Jour. Physiol.* 53:273-289. 1920), in which he found that various radio-active materials would maintain or induce heartbeat in a potassium-free Ringer solution. This is taken as evidence that the effectiveness of potassium salts on heartbeat is due to the radio-activity of potassium, for in equal radio-active concentration uranium and radium were equally effective with potassium. Potassium gives only β -radiations. Elements that emit only α -radiations were also effective in inducing and effecting heartbeat.

"The mode of action of these corpuscular radiations is not clear. The charged particles as they shoot along will act by induction, detaching everywhere electrons from these atoms; they also transfer kinetic energy, and when they come to rest on, say, some colloidal complex of the cell, they will transfer their electric charge and so may set free some ion absorbed on the surface. Whatever the nature of the action, ZWAARDEMAKER concludes that radio-activity is a mighty biological factor capable of restoring a lost function." BLACKMAN believes that this may explain, in part, the function of potassium in the plant.—WM. CROCKER.

Subalpine lake shore vegetation.—To his already extensive studies of Colorado mountain vegetation, RAMALEY³⁴ has recently added a report based upon a ten years' study of numerous subalpine lakes located at altitudes of 10,000-11,300 ft. in the Rocky Mountains of Colorado. Data are presented

³⁰ VON LAGERHEIM, G., *Bihang K. Svenska Vet. Akad. Hand.* 24: no. 4. 1898.

³¹ MAGNUS, P., *Ann. Botany* 11:87. 1897; *Ber. Deutsch. Bot. Gesells.* 20:291-296.

³² SCHROETER, J., *Bot. Centralbl.* 11:219-221. 1882.

³³ BLACKMAN, V. H., Radio-activity and normal physiological function. *Ann. Botany* 34:299-302. 1920.

³⁴ RAMALEY, F., Subalpine lake shore vegetation in north central Colorado. *Amer. Jour. Bot.* 7:57-74. *figs.* 6. 1920.